

AMENDMENTS TO THE CLAIMS

1. (Original) A piezoelectric/electrostrictive ultrasonic linear motor, comprising:
a piezoelectric or electrostrictive substrate, with an electrode provided on each of both surfaces of the piezoelectric or electrostrictive substrate;
an elastic body, to one surface or each of both surfaces of which the piezoelectric or electrostrictive substrate is attached;
a movable shaft coupled at an end thereof to the elastic body or the piezoelectric or electrostrictive substrate attached to the elastic body, the movable shaft being operated in conjunction with displacement of the piezoelectric or electrostrictive substrate; and
a movable body to be moved along the movable shaft.
2. (Currently Amended) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 1, wherein the piezoelectric or electrostrictive substrate is polarized.
3. (Original) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 2, wherein the movable body is in close contact with an outer surface of the movable shaft such that the movable body covers at least part of the movable shaft.
4. (Original) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 3, wherein the movable shaft has a circular or angled slender rod shape and transmits vibration of the piezoelectric or electrostrictive substrate at high efficiency.
5. (Currently Amended) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 1, wherein, a weight of the movable body and a frictional force between the movable shaft and the movable body are provided so that the movable body is moved along the movable shaft when the movable shaft vibrates in conjunction with the displacement of the piezoelectric or electrostrictive substrate ~~and an inertia force of the movable body is greater than a frictional force between the movable shaft and the movable body, the movable body is moved along the movable shaft.~~

6. (Currently Amended) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 1, wherein the movable body comprises: a friction member being in close contact with ~~the~~an outer surface of the movable shaft; a weight provided around an outer surface of the friction member; and an elastic shell fitted over an outer surface of the weight to hold both the friction member and the weight around the movable shaft, wherein the movable body is fitted over the movable shaft.

7. (Currently Amended) A method of driving a piezoelectric/ electrostrictive ultrasonic linear motor, having an elastic body to which at least one piezoelectric or electrostrictive substrate is attached; a movable shaft coupled to the elastic body or the piezoelectric or electrostrictive substrate attached to the elastic body; and a movable body to be moved along the movable shaft, the method comprising:

the step (a) of applying a voltage, which varies from a first voltage to a second voltage, to electrodes provided on both surfaces of the piezoelectric or electrostrictive substrate during a first period; and

the step (b) of applying a voltage, which varies from the second voltage to the first voltage, to the electrodes provided on both surfaces of the piezoelectric or electrostrictive substrate during a second period after the step (a), wherein,

~~when an inertia force of the movable body is greater than a frictional force between the movable body and the movable shaft which vibrates~~ the movable body is moved along with a movement of the movable shaft in conjunction with displacement of the piezoelectric or electrostrictive substrate during the step (a) or step (b), ~~the movable body is moved~~ to move along the movable shaft.

8. (Original) The method of driving the piezoelectric/ electrostrictive ultrasonic linear motor according to claim 7, wherein the step (a) and step (b) are repeated.

9. (Original) The method of driving the piezoelectric/ electrostrictive ultrasonic linear motor according to claim 7, wherein the first period is longer than the second period.

10. (Original) The method of driving the piezoelectric/ electrostrictive ultrasonic linear motor according to claim 7, wherein the first period is shorter than the second period.

11. (Currently Amended) The method of driving the piezoelectric/ electrostrictive ultrasonic linear motor according to claim 7, wherein, during the second period, the movable body is moved along with the movement of the movable shaft~~inertia force of the movable body is greater than the frictional force between the movable body and the movable shaft~~, so that the movable body is moved along the movable shaft.

12. (Currently Amended) The method of driving the piezoelectric/ electrostrictive ultrasonic linear motor according to claim 7, wherein, during the first period, the movable body is moved along with the movement of the movable shaft~~inertia force of the movable body is greater than the frictional force between the movable body and the movable shaft~~, so that the movable body is moved along the movable shaft.

13. (New) The method of driving the piezoelectric/ electrostrictive ultrasonic linear motor according to claim 7, wherein the movable body is moved along with the movement of the movable shaft during one of the step (a) and step (b), and the movable body is not moved back to a position of the movable shaft during the other one of the step (a) and step (b).

14. (New) The method of driving the piezoelectric/ electrostrictive ultrasonic linear motor according to claim 7, wherein the movable shaft is moved in conjunction with displacement of the piezoelectric or electrostrictive substrate between a first position and a second position, and the movable body is moved along with the movement of the movable shaft in response to the piezoelectric or electrostrictive substrate being displaced toward the second position and the movable body is not moved back to a position of the movable shaft in response to the piezoelectric or electrostrictive substrate being displaced toward the first position.

15. (New) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 1, wherein the piezoelectric or electrostrictive substrate is polarized in a thickness direction of the piezoelectric or electrostrictive substrate, or a polarization direction of the piezoelectric substrate is the same as a direction of an electrical field applied to the piezoelectric substrate.

16. (New) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 1, wherein the movable shaft is moved in conjunction with bending displacement of the elastic body and the one or more piezoelectric or electrostrictive substrate attached thereto, to move the movable body.

17. (New) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 16, wherein one or more edge/end of the elastic body or the piezoelectric or electrostrictive substrate is fixed.

18. (New) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 17, wherein the movable shaft is coupled towards a center of to the elastic body or the piezoelectric or electrostrictive substrate attached to the elastic body.

19. (New) The piezoelectric/electrostrictive ultrasonic linear motor according to claim 1, wherein the movable shaft is moved in conjunction with displacement of the piezoelectric or electrostrictive substrate between a first position and a second position, and the movable body is moved along with a movement of the movable shaft in response to the piezoelectric or electrostrictive substrate being displaced toward the second position and the movable body is not moved back to a position of the movable shaft in response to the piezoelectric or electrostrictive substrate being displaced toward the first position.